AN APPRAISAL
OF
NATIONAL TALENT SEARCH EXAMINATION-2001

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FOREWORD

The National Council of Educational Research and Training formulated a scheme in 1963 with a view to identify meritorious students possessing the potential for attaining excellence in future and provide them with necessary help and encouragement. The main objective of the scheme was to identify and nurture the talented science students, which is why the scheme was called National Science Talent Search Scheme (NSTSS). Subsequently it was extended to Social Sciences, Engineering and Medicine as well in the year 1976, which was renamed as National Talent Search Scheme (NTSS). The scheme has been reviewed a number of times to make it as fair and useful as possible.

Under the existing pattern, the selection of candidates for award of scholarship is two-tier process at Class X. The first stage selection is conducted by States and Uts to select and recommend a fixed number of candidates for second level examination. However, the second stage selection at the National Level is carried out by the NCERT. The candidates are subjected to two objective type written tests, namely Mental Ability Test and Scholastic Aptitude Test. Further a stipulated number of candidates who qualify the written examination, are subjected to face an interview. The final awards are made on the basis of composite scores obtained in the written examination and the interview.

The national level test is critically analysed with a view of studying both test and item parameters of both the tests i.e. difficulty value, discrimination index and reliability of tests; influence of some independent variables on the total scores of tests, scores of subtests and interview marks. The outcome of the analysis is subsequently used for updating the exercise of test preparations.

The present study provides a very comprehensive analysis of both test and item parameters of ntse-2001, which will help in tuning up future tests.

I express my appreciation for the efforts put in by my colleague Prof. V.K. Jain in bringing out this document in the present form. It is hoped that the findings of the study will help to improve the selection procedure of the National Talent Search Scheme.

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PREFACE

Gifted and talented students are one of the most promising human resources of the country. It is felt that heavy losses in human resources result when talented students are not promptly identified and encouraged to make the most of their abilities and talents. With the changing needs of the society for excellence, concern for equality of opportunity and for the development of varying needs and abilities of individuals for their full development, it is considered enormously important to discover and develop talent of all kinds at early stages of education.

The National Talent Search Scheme of the Council is the most prestigious scheme in vogue since 1963. For the almost last four decades, a large number of talented students have been identified and nurtured through this scheme by providing financial assistance. They have made their mark as professionals in different fields and have contributed significantly to the progress and prosperity of the country.

The scheme has been continuously and consciously reviewed over the years. The selection process consists of two tests, one being general mental ability test largely free from subject matter as contained in the school curriculum. The second being a special ability tests is to assess the candidate's capacity of comprehension, reasoning, problem solving etc. in specific subject areas. The tests perform the function of screening and a limited number of candidates are called for the interview.

The two objective type written tests are Mental Ability Test (MAT) and Scholastic Aptitude Test (SAT). The MAT consists of 100 multiple choice type questions with five alternatives where as the SAT consists equal number of multiple choice type question with four alternatives. The MAT consists of 17 different types of items. The SAT consists of items on seven subject areas Physics, Chemistry, Biology, Mathematics, History, Geography and Civics. A fixed number of candidates, who qualify the written examination, are called for interview at various places in the country, which is of 25 marks.

The present study was undertaken to examine the item parameters of the tests of NTSE-2001 and to see the influence of gender, area and caste categories on the total scores of MAT & SAT, the scores of subtests of MAT & SAT and interview marks.

The first chapter of this document contains introduction of the scheme, main objectives of the study, sample and methodology. The second chapter discusses the characteristics of items and reliability of both the tests. Frequency distribution of tests, mean, standard deviation, difficulty value, item-total correlation as discriminative index and reliability of tests have been given to examine the performance of the tests.

The chapters five through nine discuss the influence of Gender (boys & girls), area of residence (rural & urban), location of school (rural & urban), caste (General & SC/ST) category. Further in-depth analysis have been carried out to see the difference between the candidates Called and Not-called for interview and between the Awardees and Non-awardees, who were called for interview.

I am extremely grateful to Prof. (Mrs.) Sarla Rajput, Head, DEME who have encouraged me to complete this study. My thanks are due to Shri O.P. Arora, Lecturer in Selection Grade and his colleagues of DES&DP for transferring the data on magnetic media and Mr. Sandeep Sharma, my friend, for developing tables on computer. Finally, I thank Mrs. Usha Kapur, Mrs. Vidhata Sangwan and other office staff who worked hard in bringing out the report in the present form.

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Introduction of The National Talent Search Scheme

0 The Scheme

The National Council of Educational Research and Training (NCERT) with a view to identify meritorious students possessing the potential for attaining excellence in future and to provide them with necessary help and encouragement formulated a scheme in the year 1963. The main objective of the scheme was to identify and nurture the talented students. The scheme was called National Science Talent Search Scheme (NSTSS), which provided the identification of talented students and awarding them with scholarships

During the first year of the implementation of the scheme, it was confined to the Union Territory of Delhi wherein only 10 scholarships were awarded to the Class XI students In the year 1964, the scheme was extended to all the states and Union Territories in the country with 350 scholarship for the students of Class XI.

Consequent upon the introduction of 10+2+3 pattern of education, the NSTS Scheme also underwent a change in the year 1976 and it was extended to Social Sciences, Engineering and Medicine as well. The scheme was renamed as National Talent Search Scheme (NTSS) and the number of scholarships were raised to 500. Since the education system in the country was undergoing a change, the scheme was made open to the students of Class X, XI and XII and separate examinations were conducted for each class. The number of scholarships was increased from 500 to 550 in the year 1981 and to 750 in the year 1983. Fifty (50) scholarships in 1981 and seventy (70) scholarships in 1983 were also exclusively reserved for Scheduled Castes (SC) and Scheduled Tribes (ST) candidates. In 1985, the scheme was recast and was confined to class X only with the same number of scholarships was again raised from 750 to 1000 with the provision of reservation for SC and ST candidates based on the national norms of 15% and 7½% respectively.

Until 1985, the scheme was completely centralised. Three examinations at Classes X, XI and XII were organised in 15 languages in more than 400 centres in the country. The scheme was decentralised in 1985. Under the new arrangement, the selection of candidates for the award of scholarship became a two-tier process. The States and UTs were entrusted with the responsibility of conducting the first tier screening examination. The second stage selection at the National Level is carried out by NCERT.

Each state and UT was to select and recommend a stipulated number of candidates (known as State quota) for the National Level Examination to be conducted for about 3000 candidates (now 4000 candidates) by the NCERT. The quota is computed proportionately on the basis of the students enrolment at secondary level with a minimum of 10 for a Union Territory and a 25 for a state and maximum of 500 for either of the two.

.1 Evaluation Procedure

Consequent upon the inclusion of social sciences, engineering and medicine for award of scholarships, the selection procedure was modified. Now the candidates were subjected to two objective type written tests Mental Ability Test (MAT) and Scholastic Aptitude Test (SAT). The MAT, which consisted of 100 multiple choice type questions with five alternatives, was to be attempted by all the candidates. The candidates could choose any four out of eight subjects and had to answer a total of 100 questions with four alternatives in the SAT.

In 1995, all the subjects of SAT i.e. Science, Social Science and Mathematics were made compulsory with 40, 40 and 20 questions respectively.

Each item in both the test carries one mark. A candidate gets one mark for correct response. The duration of each test is ninety minutes. The minimum qualifying marks for General and SC/ST category candidates are 40 and 32 respectively in each test.

A stipulated number of candidates, who qualify these two tests, were subjected to face an interview, which is of 25 marks. The final awards to 1000 candidates were made on the basis of composite scores obtained in the MAT, SAT and the interview.

Objective And Methodology

2.0 Objective of the study

The main objective of the study was to

(i) examine item parameters of both the tests MAT and SAT

(ii) see influence of gender, area, caste categories on the total scores of MAT, SAT, the scores of subtests of MAT, SAT and interview marks

2.1 Sample & Methodology

The National level examination is conducted by NCERT on second Sunday of May each year at the centre recommended by each State/UT. Out of 4125, 3888 candidates appeared in the examination at 35 centres in the year 2001. Of the 3888 candidates, 2956 were from General, 642 from SC and 290 belonged to ST category. State wise quota and number of candidates appeared at national level examination are given in annexure-I.

Under the National Talent Search Scheme, about 1500 candidates who qualify the tests are called for interview at 15 different places in the country. Since the candidates appear for interview in 19 different Boards, the marking criteria are bound to differ. Therefore, the interview marks of individual boards were first converted into 'Z' scores at mean 'Zero' and variance 'one' and finally these marks were transformed on the common mean and standard deviation of the candidates of all the boards pooled together. The scores of MAT, SAT and transformed Interview marks have been used to study the influence of certain independent variables.

The reliability and validity of tests depends upon quality of individual items of the test. Item analysis was carried out to judge the effectiveness of the items for which the difficulty value, discrimination index (using item-total correlation) and distracter analysis were computed. Difficulty value is defined as proportion of candidates responds to an item correctly. Item-total correlation, which gives discrimination index, is defined as correlation between an item and total score of candidate. For distracter analysis, 27% top scorer and 27% bottom scorer were taken for both the test separately The reliability of tests was tested using Cronbach Alpha (α), Split-half, Parallel form methods.

2.2 Sub-components of MAT and SAT

MAT, which consists of 100 items, was regrouped into 17 different types of subtests. The names of subtests along with item numbers is given below:

1	Number Series	M1	Q1 to Q 8
2.	Sequential Letter Series	M2	Q9 to Q 12
3	Figural Series	M3	Q13 to Q 21
4.	Odd-one-out(Letter Group)	M4	Q 22 to Q31
5.	Odd-one out (Figural)	M5	Q 32 to Q40
6.	Meaningful Equations	M6	Q 41 to Q45
7	Analogy (Letter, Number, Series, Letter Group	M7	Q 46 to Q55
8.	Figural Analogy	M8	Q 56 to Q60
9.	Word Coding	M9	Q 61 to Q65
10.	Maze	M10	Q 66 to Q70
11.	Venn Diagram	M11	Q 71 to Q 80
12.	Cuboids	M12	Q 81 to Q 90
13.	Figure Matching	M13	Q 91, 92
14.	Mirror Image	M14	Q 93, Q94
15.	Paper folding	M15	Q 95, Q96
16.	Premises	M16	Q 97, Q 98
17.	Common Features or Similar Characteristics	M17	Q 99, Q 100

The SAT consists of items in seven subject areas, which is as follows:

Physics	S1	Q1 to Q 14
Chemistry	S2	Q 15 to Q 27
Biology	S3	Q 28 to Q40
Mathematics	S4	Q 41 to Q60
History	S5	Q 61 to Q 74
Geography	S6	Q75 to Q 87
Civics	S7	Q 88 to Q 100

Further Science comprises Physics, Chemistry and Biology and Social Science comprises History, Geography and Civics.

Mahalanobis–D^2 statistics has been used to test significance difference between group means of the achievement scores of MAT, SAT and sub- component of MAT and SAT and Interview marks. Stepwise selection procedure has been used to include the variable in the linear combination of variables, which gives maximum discrimination between groups. Only those variables, which are significant at 5% level of significance, have been included. The summary table gives the name of variable, the step number in which it is entered, values of minimum D squared and level of significance at that particular step after including the variable in the linear combination Only those variables, which are significant at 5% level of significance, have been included in the discriminant analysis.

2.3 Groups used in Analysis

Following groups have been used to test significance difference of the test scores and interview marks:

1. Boys and Girls
2. Rural and Urban area in which candidate resides
3. Rural and Urban area in which school is located where the candidate studies.
4. Candidates Called for Interview and Not Called for Interview.
5. Awardees and Non-awardees (Only for those candidates who were called for interview)

Class-Interval	Frequency	Percent	Cum Percent
31-40	249	6.4	6.9
41-50	825	21.2	28.1
51 60	1442	37.1	65.2
61-70	1091	28.1	93.3
71-80	251	6.5	99.7
81-90	10	.3	100.0
Total	3888	100.0	

Mean=56.21,Sd=9.94

The test proved to be of average difficulty. No candidate scored below 20 marks and above 91 marks.

3.3 Frequency Distribution of Science Scores

The frequency distribution of scores (Table 3 3) of science subjects, which is of 40 marks shows that 87% candidates scored in between 16 to 30 marks. In fact 68% of the candidates scored in between 16 to 25 marks. The mean of the science scores is 21.8, which indicates that the test was of average difficulty.

Table 3.3

Frequency Distribution of Science Test Scores

Class-Interval	Frequency	Percent	Cum Percent
0-05	1	.0	.0
6-10	34	.9	.9
11-15	339	8.7	9.6
16-20	1124	28.9	38.5
21-25	1523	39.2	77.7
26-30	764	19.7	97.4
31-35	103	2.6	100.0
Total	3888	100.0	

Mean= 21.8, Sd = 4.7

3.4 Frequency Distribution of Math Scores

The distribution of Mathematics scores (Table 3.4) shows that most of the candidates (87.6% scored in between 6 to 15 marks. The mean score of the test is 10.1 indicating that the test was of average difficulty.

Table 3.4

Frequency Distribution of Math Test Scores

Class interval	Frequency	Percent	Cum Percent
0-5	275	7.1	7.1
6-10	1934	49.7	56.8
11-15	1475	37.9	94.8
16-20	204	5.2	100.0
Total	3888	100.0	

Mean= 10.0, Sd= 3 2

3.5 Distribution of Social Science Scores

Social Science, which comprises History, Geography and Civics consists a subtest of 40 items. The distribution of scores (table 3.5) indicates that 76% of the candidates scored in between 21 to 30 marks and mean score of the test is 24.3.

Table 3.5

Frequency Distribution of Social Science Test Scores

Class-Interval	Frequency	Percent	Cum Percent
0-5	8	.2	.2
6-10	112	2.9	3.1
11-15	578	14.9	18.0
16-20	1559	40.1	58.1
21-25	1410	36.3	94.3
26-30	218	5.6	99.9
31-35	3	.1	100.0
Total	3888	100.0	

Mean=24.3,Sd=4.3

As it was expected, the subtest of Social Science is somewhat easier than Science subjects.

Characteristics of Test Items

4.1 Mental Ability Test

The Difficulty Value and Discrimination index of each item have been computed to judge the quality of test items. The table 4.1 gives difficulty values of each item of MAT test for the candidates of General, Scheduled Castes, Scheduled Tribes categories and for the entire group comprising all the three categories. The item-total correlation has also been given to see whether item discriminate or not .

Table 4.1

Difficulty Index and Item-Total Correlation Of MAT Items

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
Q1	0.84	0.86	0.79	0.72	0.27
Q2	0.86	0.91	0.76	0.68	0.38
Q3	0.91	0.94	0.83	0.78	0.37
Q4	0.98	0.99	0.95	0.91	0.26
Q5	0.79	0.83	0.67	0.62	0.32
Q6	0.80	0.86	0.64	0.60	0.41
Q7	0.88	0.92	0.78	0.70	0.40
Q8	0.94	0.96	0.89	0.82	0.33
Q9	0.77	0.80	0.66	0.63	0.44
Q10	0.65	0.70	0.50	0.51	0.43
Q11	0.77	0.81	0.65	0.60	0.46
Q12	0.77	0.81	0.65	0.55	0.45
Q13	0.77	0.81	0.67	0.61	0.43

Question Number	Difficulty Index				Item-total Correlation
	Entire Population	Category			
		Gen.	SC	ST	Entire Population
Q14	0.93	0.95	0.86	0.88	0.27
Q15	0.25	0.24	0.28	0.26	0.02
Q16	0.88	0.91	0.80	0.76	0.27
Q17	0.74	0.78	0.63	0.60	0.30
Q18	0.96	0.97	0.92	0.91	0.23
Q19	0.86	0.88	0.82	0.80	0.22
Q20	0.86	0.87	0.83	0.83	0.11
Q21	0.81	0.82	0.76	0.73	0.21
Q22	0.89	0.91	0.80	0.81	0.32
Q23	0.68	0.72	0.58	0.56	0.37
Q24	0.52	0.58	0.34	0.31	0.40
Q25	0.87	0.90	0.76	0.80	0.38
Q26	0.85	0.88	0.74	0.75	0.40
Q27	0.81	0.84	0.67	0.74	0.43
Q28	0.84	0.88	0.72	0.69	0.45
Q29	0.77	0.80	0.67	0.68	0.34
Q30	0.73	0.76	0.63	0.61	0.35
Q31	0.88	0.90	0.79	0.83	0.36
Q32	0.59	0.64	0.45	0.38	0.35
Q33	0.87	0.87	0.85	0.82	0.12
Q34	0.30	0.33	0.22	0.17	0.30
Q35	0.51	0.55	0.39	0.31	0.35
Q36	0.45	0.48	0.36	0.27	0.34
Q37	0.88	0.89	0.85	0.86	0.18
Q38	0.82	0.82	0.82	0.81	0.12
Q39	0.60	0.64	0.50	0.43	0.29
Q40	0.16	0.14	0.21	0.20	−0.02

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
Q41	0.62	0.70	0.40	0.32	0.44
Q42	0.50	0.56	0.35	0.28	0.44
Q43	0.52	0.56	0.37	0.36	0.39
Q44	0.80	0.85	0.67	0.62	0.42
Q45	0.88	0.91	0.80	0.74	0.34
Q46	0.93	0.95	0.85	0.86	0.32
Q47	0.76	0.81	0.59	0.58	0.41
Q48	0.73	0.77	0.61	0.59	0.36
Q49	0.07	0.07	0.08	0.09	−0.09
Q50	0.31	0.34	0.22	0.19	0.31
Q51	0.76	0.81	0.63	0.63	0.43
Q52	0.84	0.88	0.74	0 75	0.42
Q53	0.86	0.89	0.75	0.77	0.42
Q54	0.76	0.80	0.64	0.63	0.41
Q55	0.82	0.86	0.70	0.68	0.42
Q56	0.89	0.92	0.81	0.78	0.38
Q57	0.80	0.83	0.73	0.67	0.29
Q58	0.88	0.89	0.84	0.83	0.19
Q59	0.38	0.39	0.36	0.34	0.19
Q60	0.54	0.54	0.52	0.52	0 10
Q61	0.94	0.96	0.88	0.88	0.87
Q62	0.85	0.90	0.71	0.67	0.51
Q63	0.85	0.90	0.69	0.65	0.52
Q64	0.84	0.89	0.69	0.64	0.50
Q65	0.91	0.44	0.82	0.81	0.40

Question Number	Difficulty Index				Item-total Correlation
	Entire Population	Category			
		Gen.	SC	ST	Entire Population
Q66	0.87	0.89	0.82	0.80	0.25
Q67	0.85	0.87	0.79	0.77	0.29
Q68	0.73	0.77	0.60	0.59	0.39
Q69	0.60	0.64	0.49	0.44	0.36
Q70	0.15	0.15	0.15	0 12	0.01
Q71	0.93	0.96	0.86	0.86	0.28
Q72	0.90	0.93	0.81	0.80	0.30
Q73	0.92	0.94	0.85	0.84	0.30
Q74	0.77	0.80	0.67	0 66	0.30
Q75	0.83	0.86	0.76	0.75	0.30
Q76	0.79	0.82	0.69	0.69	0.34
Q77	0.87	0.90	0.78	0.75	0.36
Q78	0.74	0.77	0.65	0.89	0.31
Q79	0.63	0.66	0.56	0.50	0.27
Q80	0.93	0.95	0.87	0.86	0.38
Q81	0.85	0.90	0.70	0.64	0.50
Q82	0.72	0.79	0.56	0.44	0.55
Q83	0.58	0.63	0.44	0.32	0.49
Q84	0.44	0.50	0.28	0.21	0.41
Q85	0 69	0.76	0.53	0.41	0.51
Q86	0.53	0.59	0.36	0.29	0.47
Q87	0.60	0.65	0.47	0.37	0.47
Q88	0.55	0.61	0 38	0.29	0.51
Q89	0.79	0.83	0.67	0.62	0.49
Q90	0.68	0.74	0.49	0.45	0.54

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
Q91	0.72	0.77	0.58	0.55	0.45
Q92	0.78	0.83	0.66	0.61	0.48
Q93	0.78	0.81	0.70	0.65	0.39
Q94	0.83	0.86	0.75	0.71	0 40
Q95	0.71	0.75	0.62	0.52	0 41
Q96	0 72	0 75	0.63	0 58	0.42
Q97	0.07	0.07	0.06	0.06	0 02
Q98	0.04	0.04	0.05	0.08	−0.13
Q99	0.30	0.32	0.25	0.30	0.13
Q100	0.77	0.80	0.71	0.63	0 35

The candidates from General category found five items Q 40, Q 49, Q 70, Q 97 and Q 98 difficult, whereas ST candidates found two more items Q 34 and Q 50 difficulty in addition to above The difficulty value of these items was below 0.20 i.e. less than 20% of the candidates responded these items correctly.

55 items by the general, 20 items by SC and 17 items by the ST category candidates had the difficulty value in between 0.80 to 1.00, which indicates that these items were easy and more than 80% of the candidates are able to solve these questions correctly.

Fourteen items of the test has item total correlation less than 0.20. Of these 14 items, 3 items Q 40, Q 49 and Q 98 had the negative correlation value, which indicates ambiguity of the items. No item had the correlation beyond 0.60. Items having negative discriminative values are given in annexure-III.

4.2 Scholastic Aptitude Test

The difficulty value and the item-total correlation of each item of the test are given in the table 4.2

Table 4.2

Difficulty Index and Item-total correlation of SAT Items

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
A1	0.32	0.33	0.30	0.28	0.12
A2	0.46	0.46	0.44	0.43	0.14
A3	0.49	0.53	0.40	0.38	0.27
A4	0.62	0.67	0.47	0.45	0.30
A5	0.29	0.30	0.27	0.26	0.10
A6	0.20	0.19	0.23	0.28	−0.07
A7	0.36	0.39	0.29	0.23	0.22
A8	0.53	0.57	0.39	0.41	0.30
A9	0.38	0.41	0.32	0.25	0.21
A10	0.22	0.22	0.21	0.30	0.04
A11	0.35	0.36	0.34	0.28	0.14
A12	0.65	0.68	0.58	0.58	0.25
A13	0.84	0.36	0.79	0.75	0.23
A14	0.48	0.49	0.45	0.46	0.11
A15	0.82	0.86	0.70	0 65	0.37
A16	0.29	0.31	0.26	0.21	0.25
A17	0.66	0.70	0.52	0.56	0.30
A18	0.57	0.61	0.48	0.36	0.31
A19	0.79	0.82	0.71	0.69	0.24
A20	0 30	0.32	0.23	0.17	0.16

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
A21	0.42	0.43	0.37	0.37	0.17
A22	0.81	0.84	0.73	0.69	0.30
A23	0.65	0.69	0.51	0.50	0.38
A24	0.71	0.76	0.57	0.50	0.37
A25	0.76	0.79	0.66	0.63	0.28
A26	0.28	0.32	0.18	0.10	0.33
A27	0.88	0.91	0.80	0.77	0.24
A28	0.81	0.84	0.72	0.73	0.27
A29	0.23	0.24	0.22	0.21	0.15
A30	0.75	0.76	0.75	0.69	0.11
A31	0.53	0.58	0.42	0.38	0.23
A32	0.78	0.83	0.64	0.61	0.36
A33	0.21	0.21	0.22	0.14	0.04
A34	0.59	0.61	0.50	0.52	0.31
A3	0.67	0.69	0.60	0.61	0.25
A36	0.52	0.54	0.48	0.43	0.26
A37	0.65	0.69	0.54	0.47	0.34
A38	0.29	0.29	0.30	0.26	0.10
A39	0.77	0.80	0.64	0.64	0.30
A40	0.87	0.90	0.78	0.73	0.33
A41	0.35	0.37	0.26	0.25	0.22
A42	0.59	0.63	0.48	0.44	0.32
A43	0.37	0.37	0.38	0.38	0.05
A44	0.42	0.44	0.36	0.39	0.12
A45	0.50	0.53	0.42	0.42	0.22

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
A46	0.65	0.69	0.53	0.48	0 32
A47	0.39	0.41	0.36	0.31	0.18
A48	0.49	0.54	0.33	0.28	0.38
A49	0.67	0.72	0.53	0.48	0.30
A50	0.38	0.40	0.33	0.32	0.24
A51	0.36	0.40	0.25	0 21	0.29
A52	0.94	0.95	0.91	0.89	0.22
A53	0.79	0.84	0.68	0.58	0.32
A54	0.50	0.54	0.39	0.32	0.38
A55	0.40	0.43	0.29	0.26	0.30
A56	0.48	0.50	0.52	0.37	0.22
A57	0.49	0.53	0.37	0.31	0.29
A58	0.14	0.14	0.12	0.11	0.10
A59	0.57	0.61	0.47	0.42	0.34
A60	0.61	0.66	0.50	0.43	0.28
A61	0.79	0.82	0.74	0.67	0.23
A62	0.86	0.87	0.84	0.86	0.10
A63	0.27	0.27	0.29	0.26	0.05
A64	0.54	0.56	0.48	0.44	0.18
A65	0.64	0.70	0.48	0.43	0.33
A66	0.06	0.05	0.09	0.08	— 0.04
A67	0.51	0.54	0.42	0.41	0.22
A68	0.27	0.25	0.32	0.37	— 0.12
A69	0.24	0.26	0.19	0.19	0.13
A70	0.84	0.87	0.76	0.71	0.25
A71	0.92	0.94	0.83	0.83	0.24
A72	0.87	0.90	0.80	0.71	0.28
A73	0.81	0.82	0.77	0.77	0.12

Question Number	Difficulty Index				Item-total Correlation
		Category			
	Entire Population	Gen.	SC	ST	Entire Population
A74	0.97	0.98	0.95	0.96	0.13
A75	0.84	0.87	0.74	0.76	0.25
A76	0.51	0.56	0.36	0.31	0.36
A77	0.53	0.55	0.47	0.42	0.20
A78	0.39	0.42	0.31	0.30	0.19
A79	0.25	0.25	0.24	0.26	0.04
A80	0.27	0.27	0.28	0.30	0.04
A81	0.47	0.47	0.48	0.47	−0.01
A82	0 39	0.41	0.34	0.30	0.21
A83	0.56	0.60	0.44	0.44	0.25
A84	0.75	0.76	0.75	0.70	0.11
A85	0.62	0.64	0.56	0.52	0.18
A86	0.44	0.50	0.29	0.22	0.35
A87	0.73	0.74	0.67	0.67	0.19
A88	0.59	0.66	0.40	0.31	0.47
A89	0.84	0.86	0.65	0.69	0.36
A90	0.47	0.51	0.34	0.34	0.33
A91	0.94	0.96	0.89	0.85	0.21
A92	0.69	0.73	0.60	0.51	0.38
A93	0.61	0.65	0.47	0.49	0.34
A94	0.52	0.53	0 48	0 44	0.15
A95	0.50	0.55	0.36	0.32	0.28
A96	0.85	0.86	0.81	0.79	0.17
A97	0.65	0.67	0.58	0.54	0.19
A98	0.93	0.94	0.90	0.91	0.15
A99	0.74	0.78	0.63	0.63	0.30
A100	0.69	0.72	0.60	0.60	0.23

Three items Q 6 of Physics, Q 58 of Mathematics and Q 66 of History had the difficulty value below 0 20 and were found difficult by the entire group.

The SC candidates found one more item of History (Q 69) difficult, whereas ST candidates found Q 10 of Physics, Q 20 of Chemistry, Q 33 of Biology and Q 69 of History difficulty.

The group found 25 items of above average difficulty (0.21 to 0.40), 28 items of average difficulty (0.41 to 0.60) and 26 items of below average difficulty (0.61 to 0.80). Only 18 items were found to be very simple i.e. with difficulty value in the range of 0.81 to 1.00.

37 items had the item-total correlation below 0.20, which indicates poor relationship of an item with total score of the candidate. Of the 37 items, four items Q6 of Physics, Q66 and Q68 of History and Q81 of Geography had negative correlation with the total score indicating ambiguity of items Sixty two (62) items had the correlation coefficient in between 0 21 to 0.40 and only one item Q88 of Civics had correlation coefficient as 0 47.

4.3 Reliability Coefficient of Tests

4.3.1 Mental Ability Test

The reliability coefficients of the test containing 100 items and after regrouping various items into 17 subtests have been computed with three different methods known as Cronbach, Alpha, Split-half and parallel form.

Table 4.3

Reliability Coefficient of the 100 Items Test

1	Cronbach Alpha	0.92
2	Split-Half	
	Correlation between forms	0.68
	Equal length Spearman-Brown	0.81
	Guttman Split-Half	0.81
3.	Parallel Forms	0.92

Table 4.4

Reliability Coefficient of the MAT Considering A Test Consisting Of 17 Subtests

1.	Cronbach Alpha	0.83
2.	Split-Half	
	Correlation between Forms	0.64
	Equal Length Spearman-Brown	0.78
	Guttman Split-Half	0.75
3.	Parallel Forms	0.83

The reliability coefficient of 100 items test ranges from 0.81 to 0.92 by three methods indicating that the test is highly reliable. Even after regrouping various items into 17 subtests, the test reliability ranges from 0.75 to 0.83, which indicates that the test is reliable.

4.3.2 Scholastic Ability Test

The reliability coefficients of the entire 100 item test and a test consisting of seven sub components (considering seven subjects as seven subtests) have been computed using three different methods as done in MAT.

Table 4.5

Reliability Coefficient of the 100 Items Test

1	Cronbach Alpha	0.81
2	Split-Half	
	Correlation between forms	0.63
	Equal length Spearman-Brown	0.77
	Guttman Split-Half	0.77
3.	Parallel Forms	0.81

Table 4.6

Reliability Coefficient Of The Test Considering Seven Subjects As Seven Subtests

1	Cronbach Alpha	0.75
2	Split-Half	
	Correlation between forms	0.55
	Equal length Spearman-Brown	0.71
	Guttman Split-Half	0.66
	Unequal-Length Spearman-Brown	0.72
3.	Parallel Forms	0.75

The reliability coefficient of 100 item test ranges from 0.77 to 0.81 by the three methods and in 17 subtests it ranges form 0.66 to 0.75 indicating that the test is reliable.

5.1 Gender Differences

The candidates, who appeared in National Talent Search Examination in the year 2001, have been grouped according to their Gender i.e. Boys and Girls to see gender differences. In this analysis, the test scores of MAT, SAT and subtests of MAT & SAT have been taken into consideration for analysis.

5.1.1 On the Scores of MAT and SAT

The differences on the mean score of Mental Ability Test and Scholastic Ability Test was seen using Mahalanobis D^2 Statistics as both the tests, though independent of each other, are used for selection. The mean scores and valves of minimum Mahalanobis D^2 are given in the table 5.1

Table 5.1: Gender Differences On Scores Of MAT, SAT

Number of Cases by Group

SEX	Unweighted	Weighted	Label
1	801	801.0	GIRLS
2	3087	3087.0	BOYS
Total	3888	3888.0	

Group Means

SEX	MAT	SAT
1	72.03371	55.09114
2	71.62650	56.50081
Total	71.71039	56.21039

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	SAT		1	.99671	.0003	.02018	.0003	1	2
2	MAT		2	.99306	.0000	.04272	.0000	1	2

Stepwise selection procedure has been used to include the variable in the linear combination of variables, which gives maximum discrimination between groups. In the stepwise selection of variables, SAT was included first and MAT followed it, indicating that Boys and Girls differ more on the performances of Scholastic Aptitude Test than Mental Ability Test. However the groups differ significantly on both the tests.

5.1.2 On Scores of 17 Subtests of MAT

As mentioned earlier, that different items of MAT have been grouped in 17 subtests to see which of them are responsible for differences in Mental Ability Test. The mean scores and values of minimum D squared for the subtests of MAT are given in the table 5.2

Table 5.2: Gender Differences On Scores Of Subtests Of MAT

Group Means

SEX	M1	M2	M3	M4
1	6.79650	3.03620	6.88265	8.05993
2	7.05377	2.92971	7.10075	7.76514
Total	7.00077	2.95165	7 05581	7.82587

SEX	M5	M6	M7	M8
1	5.23221	3.22846	7 13109	3.54557
2	5.15322	3.34532	6 75867	3 47036
Total	5.16950	3.32124	6 83539	3.48585

SEX	M9	M10	M11	M12
1	4.51561	3.01873	8.47815	6.32459
2	4.35828	3.25040	8.26855	6.45319
Total	4.39069	3.20267	8.31173	6.42670

SEX	M13	M14	M15	M16
1	1.55306	1.57928	1.44944	.12235
2	1.49304	1.62196	1.42468	.10528
Total	1.50540	1.61317	1.42978	.10880

SEX	M17
1	1.07990
2	1.07418
Total	1.07536

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	M10		1	.99278	.0000	.04445	.0000	1	2
2	M7		2	.98318	.0000	10453	.0000	1	2
3	M1		3	.97553	.0000	.15328	.0000	1	2
4	M9		4	.97152	.0000	.17915	.0000	1	2
5	M3		5	.96827	.0000	.20026	.0000	1	2
6	M11		6	.96576	.0000	.21660	.0000	1	2
7	M4		7	.96357	.0000	.23105	.0000	1	2
8	M6		8	.96214	.0000	.24046	.0000	1	2
9	M13		9	.96085	.0000	.24898	.0000	1	2

It has been observed that the Boys and Girls differ significantly only on items of nine subtests, which are Maze, Analogy (Letters Number, Letter Group), Number series, word Coding, Figural Series, Venn Diagram, Odd-one-out (Letter Group), Meaningful Equations and Figure Matching .

5.1.3 On Scores of Seven Subtests of SAT

The SAT consists of seven subject areas, which are treated as seven subtests. The mean scores and gender differences on the subtests of SAT are given in the table 5.3

Table 5.3: Gender Differences On Scores Of Subtests Of SAT

Group Means

SEX	S1	S2	S3
1	5.77528	7.74407	7.89513
2	6.28247	7.97992	7.62326
Total	6.17798	7.93133	7.67927

SEX	S4	S5	S6	S7
1	9.58177	8.52434	6.57678	8.99376
2	10.22481	8.61646	6.79009	8.98380
Total	10.09234	8.59748	6.74614	8.98585

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	S1		1	.98972	.0000	.06346	.0000	1	2
2	S3		2	.98351	.0000	.10247	.0000	1	2
3	S4		3	.97791	.0000	.13803	.0000	1	2

It has been observed that the Boys and Girls differ significantly only on three out of seven subtests namely Physics, Biology and Mathematics.

5.2 Gender Differences For The Candidates, Who Were Called For Interview

The candidates, who qualified the National Talent Search Examination in the year 2001 and were called for interview at various places in the country, have been grouped according to their Gender i.e. Boys and Girls to see gender differences. In this analysis, the test scores of MAT, SAT, Interview marks and subtests of MAT & SAT have been taken into consideration for analysis.

5.2.1 On Scores Of MAT, SAT And Interview Marks

The mean scores and gender differences on the scores of MAT, SAT and interview marks given in table 5.4.

Table 5.4: Gender Differences On Scores Of MAT, SAT & Interview Marks

Number of Cases by Group

SEX	Unweighted	Weighted	Label
1	294	294.0	GIRLS
2	1236	1236.0	BOYS
Total	1530	1530.0	

Group Means

SEX	MAT	SAT	SMARKS
1	82.87075	62.63605	18.06463
2	81.74029	63.51214	17.31958
Total	81.95752	63.34379	17.46275

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	SMARKS		1	.99469	.0043	.03437	.0043	1	2
2	SAT		2	.98748	.0001	.08154	.0001	1	2
3	MAT		3	.98291	.0000	.11187	.0000	1	2

It has been observed that Boys and Girls differ significantly on the Interview marks and scores of SAT & MAT. It may be noted that the mean score of Girls in MAT and Interview marks is higher than those of boys, whereas boys score higher in Scholastic Aptitude Test than girls.

5.2.2 On Scores of 17 Subtests of MAT

The Mean score of 17 subtests and values of minimum D squared of three subtests, namely, analogy (letter, number, letter group), maze and sequential letter series which contribute significantly towards the difference of boys and girls, is given in table 5.5

Table 5.5: Gender Differences On Scores Of Subtests Of MAT

Group Means

SEX	M1	M2	M3	M4	M5
1	7.56803	3.66667	7.48639	9 09864	6.06122
2	7.59871	3.53398	7.57362	8.92476	5.90534
Total	7.59281	3.55948	7.55686	8.95817	5.93529

SEX	M6	M7	M8	M9
1	4.20408	7.97959	3 76871	4 92517
2	4.08981	7.78479	3.77670	4.83738
Total	4.11176	7 82222	3.77516	4.85425

SEX	M10	M11	M12	M13
1	3.53741	9.21769	8.47959	1.85714
2	3.64644	9.06472	8.27589	1.79693
Total	3.62549	9.09412	8.31503	1 80850

SEX	M14	M15	M16	M17
1	1.87755	1.78571	.11905	1.23810
2	1.85761	1.73786	.09790	1.23786
Total	1.86144	1.74706	.10196	1 23791

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	M7		1	.99613	.0149	.02501	.0149	1	2
2	M10		2	.99287	.0043	.04618	.0043	1	2
3	M2		3	.99001	.0016	.06495	.0016	1	2

5.2.3 On Scores Of 7 Subtests Of SAT

The mean score of seven subtests and the values of minimum D squared of three subtests namely Physics, Biology and Mathematics, which contributes significantly towards difference between boys and girls, is given in table 5.6.

Table 5.6: Gender Differences On Scores Of Subtests Of SAT

Group Means

SEX	S1	S2	S3	S4
1	6.60204	9.05782	8.91156	11.41497
2	7.08414	9.19822	8.50647	11.97492
Total	6.99150	9.17124	8.58431	11.86732

SEX	S5	S6	S7
1	9.10884	7.27551	10.26531
2	9.15453	7.52346	10.07039
Total	9.14575	7.47582	10.10784

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	S1		1	.99120	.0002	.05710	.0002	1	2
2	S3		2	.97897	.0000	.13821	.0000	1	2
3	S4		3	.97483	.0000	.16611	.0000	1	2

Summary tables of differences of all the comparison groups, which give list of variables found significant at 5% level of significance, are given in annexure-II.

6.1 Differences Between Candidates Called For Interview And Not Called For Interview

About 1500 candidates, who qualifies the National Talent Search Examination each year are called for interview at various places in the country In the year 2001, 1533 candidates, who qualified the written test, were called for interview. Two groups, i.e. Called for Interview and Not Called for Interview, were formed to see group differences. In this analysis, the test scores of MAT and SAT and subtests of MAT & SAT have been taken into consideration for analysis.

6.1.1 On Both the Tests of MAT & SAT

The mean scores of Mental Ability Test and Scholastic Aptitude Test and the values of minimum D squared of differences between test scores is given the table 6 1

Table 6.1: Differences On Scores Of MAT and SAT

Number of Cases by Group

CFI	Unweighted	Weighted	Label
1	1533	1533.0	INTERVIEWED
2	2355	2355.0	NOT INTERVIEWED
Total	3888	3888.0	

Group Means

CFI	MAT	SAT
1	81.93151	63.32811
2	65.05690	51.57707
Total	71.71039	56.21039

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	MAT		1	.62465	.0000	2.51479	0000	1	2
2	SAT		2	.55992	.0000	3.28924	.0000	1	2

The summary table indicates that candidates called for interview and not called for interview differ significantly on both the tests. The mean score of the candidates called for interview on both the tests is higher than those not called for interview.

6.1.2 On Sub Tests Of Mental Ability Test

The mean scores of the subtests of MAT and values of minimum D squared of significant differences between groups is given in table 6.2

Table 6.2: Differences On Scores Of Subtests of Mental Ability Test

Group Means

CFI	M1	M2	M3	M4
1	7.58969	3.55643	7.55577	8.95499
2	6.61741	2.55796	6.73036	7.09087
Total	7.00077	2.95165	7.05581	7.82587

CFI	M5	M6	M7	M8
1	5.93216	4.10959	7.81866	3.77560
2	4.67304	2.80807	6.19533	3.29724
Total	5.16950	3.32124	6.83539	3.48585

CFI	M9	M10	M11	M12
1	4.85127	3.62492	9.09198	8.31442
2	4.09087	2.92781	7.80382	5.19788
Total	4.39069	3.20267	8.31173	6.42670

CFI	M13	M14	M15	M16
1	1.80887	1.86106	1.74625	.10241
2	1.30786	1.45180	1.22378	.11295
Total	1.50540	1.61317	1.42978	.10880

CFI	M17
1	1.23744
2	.96985
Total	1.07536

Summary Table

	Action		Vars	Wilks'		Minimum		
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Group
1	M12		1	.73641	.0000	1.49800	.0000	1
2	M6		2	.68194	.0000	1.95191	.0000	1
3	M4		3	.65229	.0000	2.23081	.0000	1
4	M5		4	.63439	.0000	2.41185	.0000	1
5	M15		5	.62646	.0000	2.49537	.0000	1
6	M11		6	.62026	.0000	2.56217	.0000	1
7	M2		7	.61525	.0000	2.61713	.0000	1
8	M10		8	.61108	.0000	2.66350	.0000	1
9	M7		9	.60768	.0000	2.70189	.0000	1
10	M16		10	.60630	.0000	2.71752	.0000	1
11	M14		11	.60505	.0000	2.73184	.0000	1
12	M17		12	.60417	.0000	2.74187	.0000	1
13	M3		13	.60336	.0000	2.75119	.0000	1
14	M9		14	.60265	.0000	2.75938	.0000	1

It indicates that the groups differ on items of subtests namely cuboid, meaningful equations, odd-one-out(letter group), odd-one-out(figural), Paper folding, Venn diagram, Sequential series, Maze, Analogy (letter, number, letter Group), premises, mirror-image, common features, figural series and word coding.

6.1.3 On Subtests of SAT

The mean scores and values of minimum D squared of differences between groups is given in table 6.3.

Table 6.3: Differences On Scores Of SAT

Group Means

CFI	S1	S2	S3		
1	6.98761	9.16895	8.58513		
2	5.65096	7.12569	7.08960		
Total	6.17798	7.93133	7.67927		

CFI	S4	S5	S6	S7
1	11.86106	9.14416	7.47750	10.10372
2	8.94098	8.24161	6.27006	8.25817
Total	10.09234	8.59748	6.74614	8.98585

2 Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	S2		1	.78798	.0000	1.12602	.0000	1	2
2	S4		2	.71795	.0000	1.64412	.0000	1	2
3	S7		3	.69001	.0000	1.88016	.0000	1	2
4	S1		4	.67821	.0000	1.98567	.0000	1	2
5	S3		5	.67162	.0000	2.04622	.0000	1	2
6	S6		6	.66619	.0000	2.09703	.0000	1	2
7	S5		7	.66163	.0000	2.14024	.0000	1	2

The groups differ significantly on all the seven subtests of Scholastic Aptitude Test. However, their order of difference was Chemistry, Mathematics, Civics, Physics, Biology, Geography and History.

6.2 Differences Between Awardees And Non-Awardees, Who Were Called For Interview

About 1500 candidates, who qualifies the National Talent Search Examination each year are called for interview at various places in the country. In the year 2001, 1533 candidates, who qualified the written test, were called for interview. The final awards to 1000 candidates were made on the basis of composite scores obtained in the MAT, SAT and the interview. Two groups, i.e. Awardees and Non-awardees were formed to see group differences. In this analysis, the test scores of MAT, SAT, Interview marks and subtests of MAT & SAT have been taken into consideration for analysis.

6.2.1 On The Scores Of MAT, SAT And Interview Marks

The mean score and the differences between awardees and non-awardees on the test scores are given in table 6.4.

Table 6.4: Differences On Scores Of MAT, SAT & Interview Marks

Number of Cases by Group

FSEL	Unweighted	Weighted	Label
1	1000	1000.0	AWARDEE
2	530	530.0	NON-AWARDEE
Total	1530	1530.0	

Group Means

FSEL	MAT	SAT	SMARKS
1	83.03100	65.33300	18.73900
2	79.93208	59.59057	15.05472
Total	81.95752	63.34379	17.46275

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	SMARKS		1	.81048	.0000	1.03146	.0000	1	2
2	SAT		2	.77584	.0000	1.27444	.0000	1	2
3	MAT		3	.77140	.0000	1.30714	.0000	1	2

It has been observed that the awardees and non-awardees differ significantly on the interview marks and scores of SAT and MAT.

The mean scores of awardees are higher than non-awardees on both the tests and interview marks.

6.2.2 On the Scores of 17 Subtests of MAT

The mean scores of subtests of MAT and the values of minimum D squared for significant variables which contributes significantly towards the difference between awardees and non-awardees is given in table 6.5

Table 6.5: Differences On Scores Of Subtests Of MAT

Group Means

FSEL	M1	M2	M3	M4	M5
1	7.64600	3.63200	7.63500	9.05200	6.06100
2	7.49245	3.42264	7.40943	8.78113	5.69811
Total	7.59281	3.55948	7.55686	8.95817	5.93529

FSEL	M6	M7	M8	M9
1	4.20000	7.90400	3.80600	4.88200
2	3.94528	7.66792	3.71698	4.80189
Total	4.11176	7.82222	3.77516	4.85425

FSEL	M10	M11	M12	M13
1	3.67000	9.21100	8.49000	1.83700
2	3.54151	8.87358	7.98491	1.75472
Total	3.62549	9.09412	8.31503	1.80850

FSEL	M14	M15	M16	M17
1	1.86900	1.77500	.09500	1.26600
2	1.84717	1.69434	.11509	1.18491
Total	1.86144	1.74706	.10196	1.23791

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	M11		1	.98466	.0000	.06873	.0000	1	2
2	M5		2	.97147	.0000	.12955	.0000	1	2
3	M3		3	.96254	.0000	.17165	.0000	1	2
4	M12		4	.95604	.0000	.20283	.0000	1	2
5	M6		5	.95241	.0000	.22040	.0000	1	2
6	M17		6	.94940	.0000	.23507	.0000	1	2
7	M2		7	.94676	.0000	.24805	.0000	1	2

It has been observed that items of seven subtests namely Venn diagram, odd-one-out (figural), figural series, cuboid, meaningful equations, common features and sequential letter series contribute towards the difference between awardees and non-awardees, who were called for interview

6.2.3 On The Score Of Seven Subtests Of SAT

The mean scores of the seven subtests and values of minimum D squared of the groups are given in table 6.6.

Table 6.6: Differences On Scores Of Subtests Of SAT

Group Means

FSEL	S1	S2	S3	S4
1	7.31000	9.41200	8.81100	12.38600
2	6.39057	8 71698	8.15660	10.88868
Total	6.99150	9.17124	8 58431	11.86732

FSEL	S5	S6	S7
1	9.32500	7.74200	10.34700
2	8.80755	6.97358	9.65660
Total	9.14575	7.47582	10.10784

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig	Between Groups	
1	S4		1	94349	.0000	26418	.0000	1	2
2	S5		2	.91879	.0000	.38989	.0000	1	2
3	S1		3	.89733	.0000	.50469	.0000	1	2
4	S6		4	.88109	.0000	.59533	.0000	1	2
5	S3		5	.87182	.0000	.64851	.0000	1	2
6	S7		6	.86845	.0000	.66814	.0000	1	2

Out of seven subtests, six subtests contributed significantly towards the difference between the groups. Only the one subtest i.e. chemistry did not contribute towards the difference.

Residential Area Differences

7.1 Residential Area Differences For The Candidates, Who Appeared in Written Examination

Out of 3844 candidates, only 603 belonged to rural area and the remaining of the 3241 candidates belonged to urban area. Area of residence was not given for the 44 candidates and therefore could not be included for the analysis.

7.1.1 On The Scores Of MAT & SAT

The mean scores of MAT and SAT for both the group and the values of minimum D squared are given in table 7.1

Table 7.1: Differences On The Scores Of MAT & SAT

Number of Cases by Group

AREA	Unweighted	Weighted	Label
1	603	603.0	RURAL
2	3241	3241.0	URBAN
Total	3844	3844.0	

2.1.1.1 **Group Means**

AREA	MAT	SAT
1	67.98839	52.60531
2	72.56310	56.96637
Total	71.84547	56.28226

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	SAT		1	.97443	.0000	.19831	.0000	1	2
2	MAT		2	.97332	.0000	.20715	.0000	1	2

The candidates differ significantly on both of the tests i.e. MAT and SAT. It may be noted that urban candidates performed better both in SAT and MAT. Both the tests contribute significantly towards the difference of the candidates belonging to rural and urban area.

7.1.2 On The Scores Of 17 Subtests Of MAT

Out of 17 subtests, only items of five subtests namely analogy (letter, number, letter group), Venn diagram, Premises, Number series and word coding contribute significantly towards the difference between groups. The mean scores of subtests and values of minimum D squared are given in table 7.2.

Table 7.2: Differences On The Scores Of Subtests Of MAT

Group Means

AREA	M1	M2	M3	M4
1	6.70813	2.78109	6.82753	7.44776
2	7.06757	2.98612	7.10923	7.90682
Total	7.01119	2.95395	7 06504	7 83481

AREA	M5	M6	M7	M8
1	5.03814	3.10116	6.28192	3.45605
2	5.20395	3.36717	6.95711	3.50015
Total	5.17794	3.32544	6.85120	3.49324

AREA	M9	M10	M11	M12
1	4.13101	3.08126	7.90381	5.81592
2	4.45171	3.23450	8.39278	6.57482
Total	4.40140	3.21046	8.31608	6.45578

AREA	M13	M14	M15	M16	M17
1	1.41294	1.55224	1.33831	.08126	1.029
2	1.52947	1.62851	1.45264	.11355	1.087
Total	1.51119	1.61655	1.43470	.10848	1.07E

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Grc
1	M7		1	.98541	.0000	.11187	.0000	1
2	M11		2	.98201	.0000	.13847	.0000	1
3	M16		3	.98006	.0000	.15378	.0000	1
4	M1		4	.97834	.0000	.16731	.0000	1
5	M9		5	.97735	.0000	.17513	.0000	

7.1.3 On The Scores Of Seven Subtests Of SAT

Out of seven subtests, items of the five subtests, namely, mathematics, civics, physics, history and biology contribute towards the difference of the candidates belonging to rural and urban area. The mean score of subtests and values of minimum D squared are given in table 7.3.

Table 7.3: Differences On The Scores Of Subtests Of SAT

Group Means

AREA	S1	S2	S3
1	5.65340	7.40796	7.16750
2	6.28664	8.03610	7.78062
Total	6.18730	7.93757	7.68444

AREA	S4	S5	S6	S7
1	9.17081	8.23715	6.57380	8.39469
2	10.28571	8.67016	6 79389	9.11324
Total	10.11082	8.60224	6 75937	9.00052

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	S4		1	.98401	.0000	.12283	.0000	1	2
2	S7		2	.97800	.0000	.16996	.0000	1	2
3	S1		3	.97394	.0000	.20220	.0000	1	2
4	S5		4	.97153	.0000	.22148	.0000	1	2
5	S3		5	.97033	.0000	.23110	.0000	1	2

7.2 Residential Area Differences For The Candidates, Who Were Called For Interview

In the year 2001, 1533 candidates, who qualified the written test, were called for interview. Of these198 were from rural area and 1327 were from urban area.

7.2.1 On the Test Scores of MAT, SAT and Interview Marks

The tests cores of MAT, SAT and interview marks were taken into consideration to see the difference between groups. The mean scores of the tests and values of minimum D squared are given in table 7.4.

Table 7.4: Differences On Scores Of MAT & SAT

Number of Cases by Group

AREA	Number of Cases Unweighted	Weighted	Label
1	198	198.0	RURAL
2	1327	1327.0	URBAN
Total	1525	1525.0	

Group Means

AREA	MAT	SAT	SMARKS
1	80.07576	59.47980	16.00000
2	82.24491	63.89601	17.68425
Total	81.96328	63.32262	17.46557

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	SAT		1	.96253	.0000	.34411	.0000	1	2
2	SMARKS		2	.95859	.0000	.38186	.0000	1	2

It has been observed that the scores of SAT and interview marks contribute significantly towards difference between the candidates belonging to rural and urban area, who faced the interview.

7.2.2 On The 17 Subtests Of Mental Ability Test

It has been observed that out of 17 subtests, only three subtests i.e. cuboid, premises and analogy (letters, number series, letter group) contributes significantly towards the difference between the candidates belonging to rural and urban area. The mean scores of subtests and the values of minimum D squared are given in table 7 5.

Table 7.5: Differences On Subtests Of MAT

Group Means

AREA	M1	M2	M3	M4	M5
1	7.48485	3.53030	7.41414	8.69697	5 95960
2	7.60889	3.56217	7.57875	8.99699	5.93293
Total	7.59279	3.55803	7.55738	8.95803	5.93639

AREA	M6	M7	M8	M9
1	4.02020	7.56566	3.80303	4.75253
2	4.12434	7.86360	3.77167	4.86888
Total	4.11082	7.82492	3.77574	4.85377

AREA	M10	M11	M12	M13
1	3.58081	8.90909	7.74747	1.75253
2	3.63301	9.12057	8.40241	1.81763
Total	3.62623	9.09311	8.31738	1.80918

AREA	M14	M15	M16	M17
1	1.87374	1.69697	.05556	1.23232
2	1.85908	1.75509	.10927	1.23964
Total	1.86098	1.74754	.10230	1.23869

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	M12		1	.98788	.0000	10844	.0000	1	2
2	M16		2	.98408	.0000	.14299	.0000	1	2
3	M7		3	.98061	.0000	.17479	.0000	1	2

7.2.3 On The Seven Subtests Of SAT

It has been observed that out of seven subtests, only items of four subtests i.e. Mathematics, Physics, Civics and Biology contribute towards the difference between the candidates belonging to or rural and urban area. The mean scores of subtests and the values of minimum D squared are given in table 7.6.

Table 7.6: Differences On Subtests Of SAT

Group Means

AREA	S1	S2	S3	S4
1	6.26263	8.66667	8.08081	10.78283
2	7.09721	9.23888	8.65712	12.02185
Total	6.98885	9.16459	8.58230	11.86098

AREA	S5	S6	S7
1	8.88384	7.25758	9.54545
2	9.18161	7.51017	10.18915
Total	9.14295	7.47738	10.10557

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	S4		1	.98067	.0000	.17420	.0000	1	2
2	S1		2	.97007	.0000	.27276	.0000	1	2
3	S7		3	.96309	.0000	.33880	.0000	1	2
4	S3		4	.95925	.0000	.37549	.0000	1	2

Location Of School Differences

8.1 Location of School differences

Out of 3,888 candidates, only 3,715 candidates mentioned their location of school as rural or urban area. Of the 3715 candidates, only 608 had studied in rural area schools and the remaining 3,107 studied in urban area schools.

8.1.1 On Scores of MAT and SAT

The candidates belonging to rural and urban schools differ significantly only on SAT. The candidates belonging to urban schools performed better than those of rural schools on scores of SAT. However, the candidates do not differ significantly on total score of Mental Ability Test. The mean scores of the tests and values of minimum D squared are given in table 8.1.

Table 8.1: Differences On MAT & SAT

Number of Cases by Group

AREA_SCH	Unweighted	Weighted	Label
1	608	608.0	RURAL
2	3107	3107.0	URBAN
Total	3715	3715.0	

Group Means

AREA_SCH	MAT	SAT
1	69.78125	54.12171
2	72.32861	56.69778
Total	71.91171	56.27618

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups 1	2
1	SAT		1	.99072	.0000	.06838	.0000		

8.1.2 On 17 Subtests Of MAT

The candidates belonging to urban schools differ significantly with those of rural schools only on five subtests, namely, word coding, premises, analogy (letter, number series, letter group), Venn diagram and odd-one-out (figural). The mean of test scores and the values of minimum D squared are given in table 8.2.

Table 8.2: Differences On Subtests Of MAT

Group Means

AREA_SCH	M1	M2	M3	M4
1	6.90789	2.86678	6.95395	7.63816
2	7.03090	2.98970	7.09527	7.90312
Total	7.01077	2.96958	7.07214	7.85976

AREA_SCH	M5	M6	M7	M8
1	5.19243	3.27796	6.53454	3.50164
2	5.17927	3.35275	6.91954	3.49372
Total	5.18143	3.34051	6.85653	3.49502

AREA_SCH	M9	M10	M11	M12
1	4.16118	3.12171	8.01974	6.04934
2	4.44062	3.22465	8.36724	6.54039
Total	4.39489	3.20781	8.31036	6.46003

AREA_SCH	M13	M14	M15	M16	M17
1	1.40789	1.58224	1.44243	.07072	1.05263
2	1.53074	1.62440	1.43708	.11619	1.08304
Total	1.51063	1.61750	1.43795	.10875	1.07806

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	M9		1	.99363	.0000	.04684	.0000	1	2
2	M16		2	.99049	.0000	.07010	.0000	1	2
3	M7		3	.98850	.0000	.08493	.0000	1	2
4	M11		4	.98721	.0000	.09460	.0000	1	2
5	M5		5	.98582	.0000	.10502	.0000	1	2

8.1.3 On Seven Subtests Of SAT

The candidates studying in urban schools differ significantly with those of rural schools only on three subtests, namely, mathematics, physics and history. The mean scores of tests and the values of minimum D squared are given in Table 8.3.

1.1.5

Table 8.3: Differences On Subtests Of SAT

Group Means

AREA_SCH	S1	S2	S3
1	5.78454	7.65625	7.45230
2	6.26328	7.99356	7.71741
Total	6.18493	7.93836	7.67402

AREA_SCH	S4	S5	S6	S7
1	9.44901	8.33717	6.65296	8.78947
2	10.24622	8.65175	6.78243	9.04313
Total	10.11575	8.60027	6.76124	9.00162

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	S4		1	.99149	.0000	.06269	.0000	1	2
2	S1		2	.98797	.0000	.08894	.0000	1	2
3	S5		3	.98564	.0000	.10641	0000	1	2

8.2 Location Of School Differences For The Candidates, who were Called For Interview

Out of 1533 candidates, who were called for interview, the location of school was available with 1482 candidates. Out of these, 219 had studied in rural schools and the remaining 1263 was from urban schools.

8.2.1 On MAT, SAT and Interview marks

The candidates of the rural and urban schools differ significantly on interview marks and test scores of SAT. The mean scores and values of minimum D squared are given in table 8.4

Table 8.4: Differences On MAT, SAT & Interview Marks

Number of Cases by Group

AREA_SCH	Unweighted	Weighted	Label
1	219	219.0	RURAL
2	1263	1263.0	URBAN
Total	1482	1482.0	

Group Means

AREA_SCH	MAT	SAT	SMARKS
1	81.15525	60.87215	16.20091
2	82.14489	63.70625	17.71180
Total	81.99865	63.28745	17.48853

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	SMARKS		1	.98213	.0000	.14429	.0000	1	2
2	SAT		2	.97542	.0000	.19979	.0000	1	2

8.2.2 On 17 Subtests Of MAT

Though the candidates of two groups do not differ significantly on total scores of MAT, but they differ on the items of seven subtests, namely, cuboid, premises, odd-one-out (figural), Venn diagram, analogy (letter, number series, letter group), meaningful equations and word coding The mean scores and values of minimum D squared are given in table 8.5.

Table 8.5: Differences On Subtests Of MAT

Group Means

AREA_SCH	M1	M2	M3	M4	M5
1	7.57991	3.61187	7.54795	8.84932	6.16438
2	7.59224	3.56136	7.57007	8.97783	5.90578
Total	7.59042	3.56883	7.56680	8.95884	5.94399

AREA_SCH	M6	M7	M8	M9
1	4.19178	7.60731	3.78082	4.74886
2	4.10610	7.85986	3.78306	4.87173
Total	4.11876	7.82254	3.78273	4.85358

AREA_SCH	M10	M11	M12	M13
1	3.59817	8.84475	7.89954	1.73973
2	3.63183	9.12668	8.39588	1.81789
Total	3.62686	9.08502	8.32254	1.80634

AREA_SCH	M14	M15	M16	M17
1	1.88584	1.77626	.04110	1.28767
2	1.85748	1.74268	.11481	1.22961
Total	1.86167	1.74764	.10391	1.23819

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda[a]	Sig.	Minimum D Squared	Sig.	Between Groups	
1	M12		1	.99222	.0007	.06220	.0007	1	2
2	M16		2	.98463	.0000	.12379	.0000	1	2
3	M5		3	.97866	.0000	.17288	.0000	1	2
4	M11		4	.97301	.0000	.21326	.0000	1	2
5	M7		5	.97008	.0000	.24454	.0000	1	2
6	M6		6	.96723	.0000	.26869	.0000	1	2
7	M9		7	.96471	.0000	.29011	.0000	1	2

8.2.3 On Scores Of Seven Subtests Of SAT

The candidates of two groups differ significantly on three subtests, namely physics, history and mathematics. The means and values of minimum D squared are given in table 8.6.

Table 8.6: Differences On Subtests Of SAT

Group Means

AREA_SCH	S1	S2	S3	S4
1	6.42009	8.82192	8.29224	11.18721
2	7.08393	9.20665	8.62154	11.95487
Total	6.98583	9.14980	8.57287	11.84143

AREA_SCH	S5	S6	S7
1	8.91781	7.28767	9.94521
2	9.20190	7.50752	10.12985
Total	9.15992	7.47503	10.10256

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	S1		1	.98661	.0000	.10762	.0000	1	2
2	S5		2	.98259	.0000	.14052	.0000	1	2
3	S4		3	.97918	.0000	.16861	.0000	1	2

9.0 Caste Differences For The Candidates, Who Appeared In The NTS Examination

Out of 3,888 candidates, who appeared at the second level NTS examination, 932 candidates belonged to SC and ST category and the remaining 2956 belonged to general category. The performances of candidates have been compared between two caste groups.

9.1.1 On the Scores of MAT and SAT

The two groups differ significantly on both the scores of SAT and MAT. The mean scores of general category were higher than the SC & ST category candidates. The mean scores of the tests and the values of minimum D squared are given in table 9.1.

Table 9.1: Caste Differences On MAT & SAT

Number of Cases by Group

CASTE	Unweighted	Weighted	Label
1	2956	2956.0	GENERAL
2	932	932.0	SC & ST
Total	3888	3888.0	

Group Means

CASTE	MAT	SAT
1	74.96651	58.76455
2	61.38305	48.10944
Total	71.71039	56.21039

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	SAT		1	.79046	.0000	1.45377	.0000	1	2
2	MAT		2	.75480	.0000	1.78157	.0000	1	2

9.1.2 On Scores of 17 Subtests of MAT

Out of 17 subtests, the candidates of General and SC & ST category differ significantly only on the items of eight subtests, namely, cuboid, number series, meaningful equations, word coding, Venn diagram, analogy (letter, number, letter group), odd-one-out (letter group) and figural series. The mean scores of subtests and values of minimum D squared are given in table 9.2.

Table 9.2: Caste Differences On Subtests Of MAT

Group Means

CASTE	M1	M2	M3	M4
1	7.26827	3.12280	7.22869	8.17016
2	6.15236	2.40880	6.50751	6.73391
Total	7.00077	2.95165	7.05581	7.82587

CASTE	M5	M6	M7	M8
1	5.37145	3.57781	7.16509	3.56935
2	4.52897	2.50751	5.78970	3.22103
Total	5.16950	3.32124	6.83539	3.48585

CASTE	M9	M10	M11	M12
1	4.59371	3.32578	8.58694	6.99696
2	3.74678	2.81223	7.43884	4.61803
Total	4.39069	3.20267	8.31173	6.42670

CASTE	M13	M14	M15	M16	M17
1	1.59574	1.67355	1.50068	.10487	1.11468
2	1.21888	1.42167	1.20494	.12124	.95064
Total	1.50540	1.61317	1.42978	.10880	1.07536

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	M12		1	.88280	.0000	.72809	.0000	1	2
2	M1		2	.83695	.0000	1.06836	.0000	1	2
3	M6		3	.81980	.0000	1.20544	.0000	1	2
4	M9		4	.80981	.0000	1.28803	.0000	1	2
5	M11		5	.80436	.0000	1.33392	.0000	1	2
6	M7		6	.80051	.0000	1.36670	.0000	1	2
7	M4		7	.79851	.0000	1.38385	.0000	1	2
8	M3		8	.79693	.0000	1.39744	.0000	1	2

9.1.3 On Scores Of Seven Subtests Of SAT

The groups differ on all the seven subtests of SAT. The order of difference of the tests is Chemistry, Mathematics, Civics, History, Geography, Physics and Biology. The mean scores of the subtests and values of minimum D squared are given in table 9.3.

Table 9.3: Caste Differences On Subtests Of SAT

Group Means

CASTE	S1	S2	S3	
1	6.42456	8.36536	7.99357	
2	5.39592	6.55472	6.68240	
Total	6.17798	7.93133	7.67927	

CASTE	S4	S5	S6	S7
1	10.70704	8.82442	7.02842	9.42118
2	8.14270	7.87768	5.85086	7.60515
Total	10.09234	8.59748	6.74614	8.98585

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	S2		1	.87295	.0000	.79816	.0000	1	2
2	S4		2	.83239	.0000	1.10425	.0000	1	2
3	S7		3	.80385	.0000	1.33818	.0000	1	2
4	S5		4	.79472	.0000	1.41662	.0000	1	2
5	S6		5	.78855	.0000	1.47055	.0000	1	2
6	S1		6	.78695	.0000	1.48468	.0000	1	2
7	S3		7	.78551	.0000	1.49750	.0000	1	2

9.2 Caste Differences For Those Candidates, Who Were Called For Interview

Out of 1533 candidates, who were called for interview, 352 belonged to SC & ST category and the remaining 1181 candidates belonged to general category.

9.2.1 On the Scores of MAT, SAT and Interview Marks

The candidates belonging to both the groups differ significantly on both the written tests and the interview marks. The candidates belonging to general category performed better than SC & ST category. The mean of scores and the values of minimum D squared are given in Table 9.4

Table 9.4: Caste Differences On MAT, SAT & Interview Marks

Number of Cases by Group

	Number of Cases		
CASTE	Unweighted	Weighted	Label
1	1181	1181.0	GENERAL
2	352	352.0	SC & ST
Total	1533	1533.0	

CASTE	MAT	SAT	SMARKS
1	84.19560	65.87976	18.37765
2	74.38395	54.76218	14.36676
Total	81.95752	63.34379	17.46275

Summary Table

	Action		Vars	Wilks'		Minimum			
Step	Entered	Removed	In	Lambda	Sig.	D Squared	Sig.	Between Groups	
1	MAT		1	.62747	.0000	3.36745	.0000	1	2
2	SAT		2	.42974	.0000	7.52680	.0000	1	2
3	SMARKS		3	.41973	.0000	7.84167	.0000	1	2

9.2.2 Caste Difference On 17 Subtests Of MAT

The groups differ significantly on items of 11 subtests namely cuboid, meaningful equations, analogy (letter, number series, letter group), number series, Venn diagram, odd-one-out (letter group), figural series, odd-one-out (figural), figure matching, premises and word coding. The mean of scores and the values of minimum D squared are given in table 9.5.

Table 9.5: Caste Differences On Subtests Of MAT

Group Means

CASTE	M1	M2	M3	M4
1	7.73751	3.67062	7.66384	9.20152
2	7.09375	3.17330	7.19318	8.12784
Total	7.58969	3.55643	7.55577	8.95499

CASTE	M5	M6	M7	M8
1	6.12108	4.33870	8.06605	3.82388
2	5.29830	3.34091	6.98864	3.61364
Total	5.93216	4.10959	7.81866	3.77560

CASTE	M9	M10	M11	M12
1	4.92125	3.69771	9.23370	8.80864
2	4.61648	3.38068	8.61648	6.65625
Total	4.85127	3.62492	9.09198	8.31442

CASTE	M13	M14	M15	M16	M17
1	1.86198	1.88569	1.80186	.10330	1.25826
2	1.63068	1.77841	1.55966	.09943	1.16761
Total	1.80887	1.86106	1.74625	.10241	1.23744

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	M12		1	.79474	.0000	1.45817	.0000	1	2
2	M6		2	.71965	.0000	2.19944	.0000	1	2
3	M7		3	.67554	.0000	2.71162	.0000	1	2
4	M1		4	.64653	.0000	3.08668	.0000	1	2
5	M11		5	.62764	.0000	3.34943	.0000	1	2
6	M4		6	.61213	.0000	3.57736	.0000	1	2
7	M3		7	.60163	.0000	3.73842	.0000	1	2
8	M5		8	.59867	.0000	3.78484	.0000	1	2
9	M13		9	.59664	.0000	3.81683	.0000	1	2
10	M16		10	.59502	.0000	3.84264	.0000	1	2
11	M9		11	.59348	.0000	3.86717	.0000	1	2

9.2.3 Caste Differences On Seven Subtests Of SAT

The group differ significantly on all the seven subtests of SAT. The order of difference is chemistry, civics, mathematics, geography, physics, history and biology. The mean scores and the values of minimum D squared are given in Table 9.6.

Table 9.6: Caste Differences On Subtests Of SAT

Group Means

CASTE	S1	S2	S3
1	7.32430	9.57494	8.85436
2	5.85795	7.80682	7.68182
Total	6.98761	9.16895	8.58513

CASTE	S4	S5	S6	S7
1	12.53937	9.31583	7.75699	10.51397
2	9.58523	8.56818	6.53977	8.72727
Total	11.86106	9.14416	7.47750	10.10372

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Minimum D Squared	Sig.	Between Groups	
1	S2		1	.82467	.0000	1.20033	.0000	1	2
2	S7		2	.73411	.0000	2.04484	.0000	1	2
3	S4		3	.65937	.0000	2.91657	.0000	1	2
4	S6		4	.64526	.0000	3.10389	.0000	1	2
5	S1		5	.63425	.0000	3.25570	.0000	1	2
6	S5		6	.62495	.0000	3.38819	.0000	1	2
7	S3		7	.61736	.0000	3.49926	.0000	1	2

Outcome Of The Study

1. The negatively skewed frequency distribution of MAT scores indicated that the test was easy
2. Three items Q. 40, Q. 49 and Q. 98 of MAT had the negative item-total correlation with total score indicating ambiguity of items.
3. The Scholastic Aptitude Test proved to be of average difficulty. The subtests of science and mathematics were of average difficulty, whereas subtests of social sciences were easier than science subjects.
4. Four items of SAT, namely Q. 6 of Physics, Q. 66 & Q. 68 of History and Q. 81 of geography had negative correlation with the total score indicating ambiguity of items.
5. The two tests of MAT & SAT found to be reliable.
6. The boys and girls, who appeared for NTS examination, differ significantly on the 100 item tests of SAT and MAT. Boys and Girls, who were called for interview (CFI), also differ significantly on interview marks, scores of SAT and MAT.
   (i) The boys and girls differ significantly on items of nine subtests of MAT, namely, maze, analogy (letter, number series, letter group), number series, word coding, figural series, venn diagram, odd-one-out (letter group), meaningful equations, figure matching; whereas the CFI group of candidates differ significantly only on three (analogy maze, sequential letter series) out of 17 subtests. It is clear from here that the difference between groups has a narrowed down on items of mental ability test.

   (ii) The boys and girls, belonging to entire group and CFI differ significantly on three subtests i.e. physics, mathematics & biology, out of seven subtests of SAT. However, their order of selection differed in two analysis. It is pertinent to point out that boys score higher in physics and mathematics whereas girls score higher in biology.
7. The candidates of entire group, regrouped into Called for Interview (CFI) and Not Called for Interview (NCFI), differ significantly on both the tests of MAT and SAT. Whereas the CFI candidates, who were further regrouped into awardee and non-awardee, also differ on Interview marks and on both the tests of SAT & MAT. This ensures that our two tier selection of candidates discriminates significantly the awardees and non-awardees for award of scholarship.
   (i) The candidates belonging to CFI and NCFI discriminates on the items of 14 subtests; where as the CFI candidates, regrouped into awardee & non-awardee, differ significantly only on seven subtests namely venn diagram, odd-one-out (figural), figural series, cuboid, meaningful equations, common features and

sequential letter series. Again this indicates that the difference between awardees and non-awardees exists but it has narrowed down to fewer number of subtests.

(ii) The CFI and NCFI differ significantly on all the seven subtests of SAT whereas awardee and non-awardee differ significantly on six subtests. The group does not differ on the subtest of chemistry.

8. The entire group of candidates, regrouped into rural and urban according to their area of residence, differ significantly on both the total scores of SAT and MAT. However, the rural-urban candidates belonging to CFI group differ significantly on SAT and interview marks indicating that rural candidates were at par with the urban candidates on the MAT

   (i) Rural and urban candidates of the entire group differ significantly on five subtests of MAT namely, analogy venn diagram, premises and word coding. Whereas the CFI candidates differ only on items of three subtests i.e. cuboid, premises and analogy. Though the rural-urban candidates differ on some items of subtests indicating by and large they are at par with each other.

   (ii) Area differences exist with respect to subtests of SAT for the entire group and as well as for CFI candidates The mean scores of urban candidates are higher than rural candidates indicating that urban candidates gets more exposure of printed material.

9. The entire group of candidates belonging to rural and urban schools differ significantly only on SAT, whereas CFI candidates belonging to two school areas differ significantly on interview marks and SAT indicating the two groups of candidates do no differ on MAT and therefore they are at par with each other.

   (i) School area differences occur only on three subtests of SAT i.e. mathematics, physics and history indicating candidates of two school areas are at par with each other on four subjects.

   (ii) The general and SC/ST candidates of entire group differ significantly on total scores of SAT and MAT and CFI candidates also differ on interview marks. The general candidates score higher than SC/ST candidates.

10. The entire group of candidates belonging to two caste categories differ on eight subtests, whereas CFI candidates differ on 11 subtests indicating sharp differences between two caste group of candidates.

(i) The caste differences exist on all subtests of SAT The higher mean scores of general candidates indicates that they have more exposure of printed material than SC/ST candidates.

2.1.11 Conclusion

The Mental ability test was found to be easy. Easy items of the subtests number series, figural analogy, figure matching, which do not discriminates among the CFI and NCFI candidates need to be replaced. Items of social sciences need to be set of higher difficulty. Care maybe taken to avoid non-functional items both in MAT and SAT, while framing the questions.

Difference between awardees and non-awardees has narrowed down as compared to those called for interview and not called for interview in two written tests.

2.1.12 Conjecture

If the trend continues, this difference may further shrink if comparison is made between the awardees and non-awardees of the same caste category.

Annexure-1

Number of NTS Scholarships Awarded in the Year 2001

Sl. No.	State/UT	Quota Allotted	Number of Candidates Appeared	Number of Scholarships Awarded		Total
				General	SC& ST	
1.	Andhra Pradesh	240	203	23	09	32
2.	Arunachal Pradesh	25	22	01	01	02
3.	Assam	120	115	05	06	11
4.	Bihar	240	238	74	31	105
5.	Delhi	70	69	41	05	46
6.	Goa	25	24	05	-	05
7.	Gujarat	215	183	05	02	07
8.	Haryana	95	94	39	-	39
9.	Himachal Pradesh	40	40	06	07	13
10.	Jammu and Kashmir	40	39	01	-	01
11.	Karnataka	215	213	50	28	78
12.	Kerala	225	216	25	12	37
13.	Madhya Pradesh	285	260	43	19	62
14.	Maharashtra	500	496	178	55	233
15.	Manipur	25	24	02	02	04
16.	Meghalaya	25	23	-	-	-
17.	Mizoram	25	10	-	-	-
18.	Nagaland	25	25	-	03	03
19.	Orissa	225	217	42	11	53
20.	Punjab	120	120	23	03	26
21.	Rajasthan	180	176	57	09	66
22.	Sikkim	25	25	-	-	-
23.	Tamil Nadu	340	322	33	08	41
24.	Tripura	25	07	-	-	-
25.	Uttar Pradesh	500	474	56	16	72
26.	West Bengal	215	209	38	18	56
27.	A&N Island	10	09	-	-	-
28.	Chandigarh	10	10	07	01	08
29.	D&N Haveli	10	09	-	-	-
30.	Daman & Diu	10	01	-	-	-
31.	Lakshadweep	10	05	-	-	-
32.	Pondicherry	10	10	-	-	-
Total		4125	3888	754	246	1000

Annexure-II

Summary Table for Differences between Groups

Gender Differences

Table No.	Entire Population	Table No.	Called for Interview
100 Item Test			
5.1	SAT	5.4	S Marks
	MAT		SAT
			MAT
Subtests of MAT			
5.2		5.5	
	M 10 Maze		
	M 7 Analogy (letter, number, series, letter group		M7 Analogy (letter, number series, letter group)
	M 1 Number series		M10 Maze
	M 9 Word Coding		M2 Sequentional letter series
	M 3 Figural Series		
	M 11 Venn diagram		
	M 4 Odd-one-out (letter group)		
	M 6 Meaningful equation		
	M 13		
Subtests of SAT			
5.3		5.6	
	S 1 Physics		S 1 Physics
	S 3 Biology		S 3 Mathematics
	S 4 Mathematics		S 4 Biology

Differences between Candidates called for Interview and Not Called for Interview

Table No.	Entire Population		Table No.	Called for Interview Awardee Vs Non Awardee
100 Item Test				
6.1	MAT		6.4	Interview Marks
	SAT			SAT
				MAT
Subtests of MAT				
6.3	M 12	Cuboid	6.5	M11 Venn diagram
	M 6	Meaningful equations		M5 odd-One-Out (Figural)
	M4	Odd-one-Out (Letter group)		M3 Figural series
	M 5	Odd-one-Out (figural)		M12 Cuboid
	M 15	Paper folding		M6 Meaningful equations
	M 11	Venn diagram		M17 Common features
	M 2	Sequential letter series		M2 Sequential letter series
	M 10	Maze		
	M 7	Analogy (letter, number series, letter group		
	M 16	Premises		
	M 14	Mirror image		
	M 17	Common Features		
	M 3	Figural series		
	M 9	Figural series Word coding		

Subtests of SAT				
6.3	S2	Chemistry	6.6	S4 Mathematics
	S4	Mathematics		S5 History
	S7	Civics		S1 Physics
	S1	Physics		S6 Geography
	S3	Biology		S3 Biology
	S6	Geography		S7 Civics
	S5	History		

Residential Area Differences

Table No.	Entire Population	Table No.	CFI
100 Item Tests			
7.1	SAT	7.4	SAT Interview Marks
	MAT		
Subtests of MAT			
7.2	M7 Analogy	7.5	M12 Cuboid
	M11 Venn diagram		M16 Premises
	M16 Premises		M7 Analogy
	M1 Number Series		
	M9 Word Coding		
Subtests of SAT			
7.3	S4 Mathematics	7.6	S4 Mathematics
	S7 Civics		S1 Physics
	S1 Physics		S7 Civics
	S5 History		S3 Biology
	S3 Biology		

Location of School Differences

Rural, Urban School Difference

Table No.	Entire Population	Table No.	CFI
100 Item Tests			
8.1	SAT	8.4	Interview Marks SAT
Subtests of MAT			
8.2	M 9 Word Coding	8.5	M 12 Cuboid
	M 16 Premises		M 16 Premises
	M 7 Analogy		M 5 Odd-one-out
	M 11 Venn diagram		M 11 Venn diagram
	M 5 Odd-one-out		M 7 Analogy
			M 6 Meaningful equations
			M 9 Word Coding
Subtests of SAT			
8.3	S4 Mathematics	8.6	S1 Physics
	S1 Physics		S5 History
	S5 History		S4 Mathematics

Caste Difference

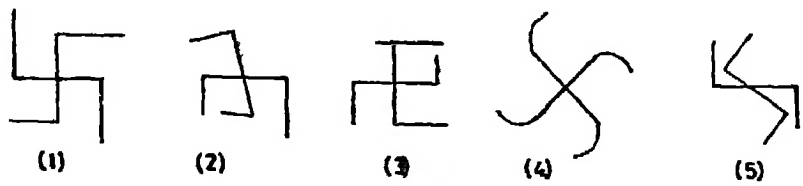
Table No.	Entire Population	Table No.	CFI
100 Item Tests			
9.1	SAT	9.4	MAT
	MAT		SAT
			Interview Marks
Subtests of MAT			
9.2	M 12 Cuboid	9.5	M 12 Cuboid
	M1 Number Series		M 6 Meaning equations
	M6 Meaning equations		M7 Analogy
	M9 Word coding		M1Numebr Series
	M11 Venn diagram		M11Venn diagram
	M7 Analogy		M4 Odd-one-out
	M4 Odd-one-out		M3 Figural Series
	M3 Figural Series		M5 Odd-one-out (figural)
			M13 Figure Matching
			M16 Premises
			M9 Word Coding
Subtests of SAT			
9.3	S2 Chemistry	9.6	S2 chemistry
	S4 Mathematics		S7 civics
	S7 Civics		S4 Mathematics
	S5 History		S6 Geography
	S6 Geography		S1 Physics
	S1 Physics		S5 History
	S3 Biology		S3 Biology

Items having Negative Discriminative Values

MENTAL ABILITY TEST

Q. 40 Direction: In the following questions, find the one that does not belong to the rest in the group and write its alternative number on the answer-sheet against the corresponding question number.

40.



(Key answer 3)

Q. 49 Direction: The two groups of alphabets/number on the left side of the sign: : are related in the same way as two groups of alphabet/number on the right side of the sign: : out of which one is missing as shown by (?). Find the missing one from amongst the alternatives given below in each question and write its number on the answer-sheet against the corresponding question number

BHFD: YSUW : : VMPS : ?

1. XRTV
2. HENK
3. EKHN
4. ENKH
5. DMJG

(Key answer 5)

Q. 98 Direction: In the following questions, statements 1 and 2 are followed by conclusions I and II. Assure the statements to be true. Decide which of the conclusions follow. Find the correct alternative given under each question and write its number on the answer-sheet against the corresponding question number.

Statements: 1. All engineers wear black caps.
2. No tall person wears black cap.

Conclusions: I. No engineer is tall.
II. No short person is an engineer.

1. Only I follows
2. Only II follows
3. Either I or II follows
4. Both I and II follow
5. Neither I nor II follows

(Key answer 3)

Q 6 A thorough examination of the eye of a child revealed that he had few rod cells but no cone cells in his retina. He is suffering from

1 night blindness
2. day blindness
3 red-green colour blindness
4 shortsightedness (Key answer 1)

Q. 66 The Mughal King who had the largest number of Hindu Mansabdars was
1. Akbar
2 Jahangir
3 Shah Jahan
4 Aurangzeb (Key answer 4)

Q 68. Tshe main leader of the Revolt of 1857 was

1 Rani Lakshmibai
2. The Nawab of Awadh
3 Bahadur Shah II
4. Nana Saheb (Key answer 1)

Q 81 In listening to a radio, distant stations could be picked up at night easily, but difficult during the daytime This is due to one of the following reasons

1. in the day time there is a lot of noise compared to night
2 during the daytime it is hotter compared to night
3. the atmosphere is clear during the night compared to the daytime
4. the ionised layer is closer to the earth in the day
while at night it is much higher up

(Key answer 1)